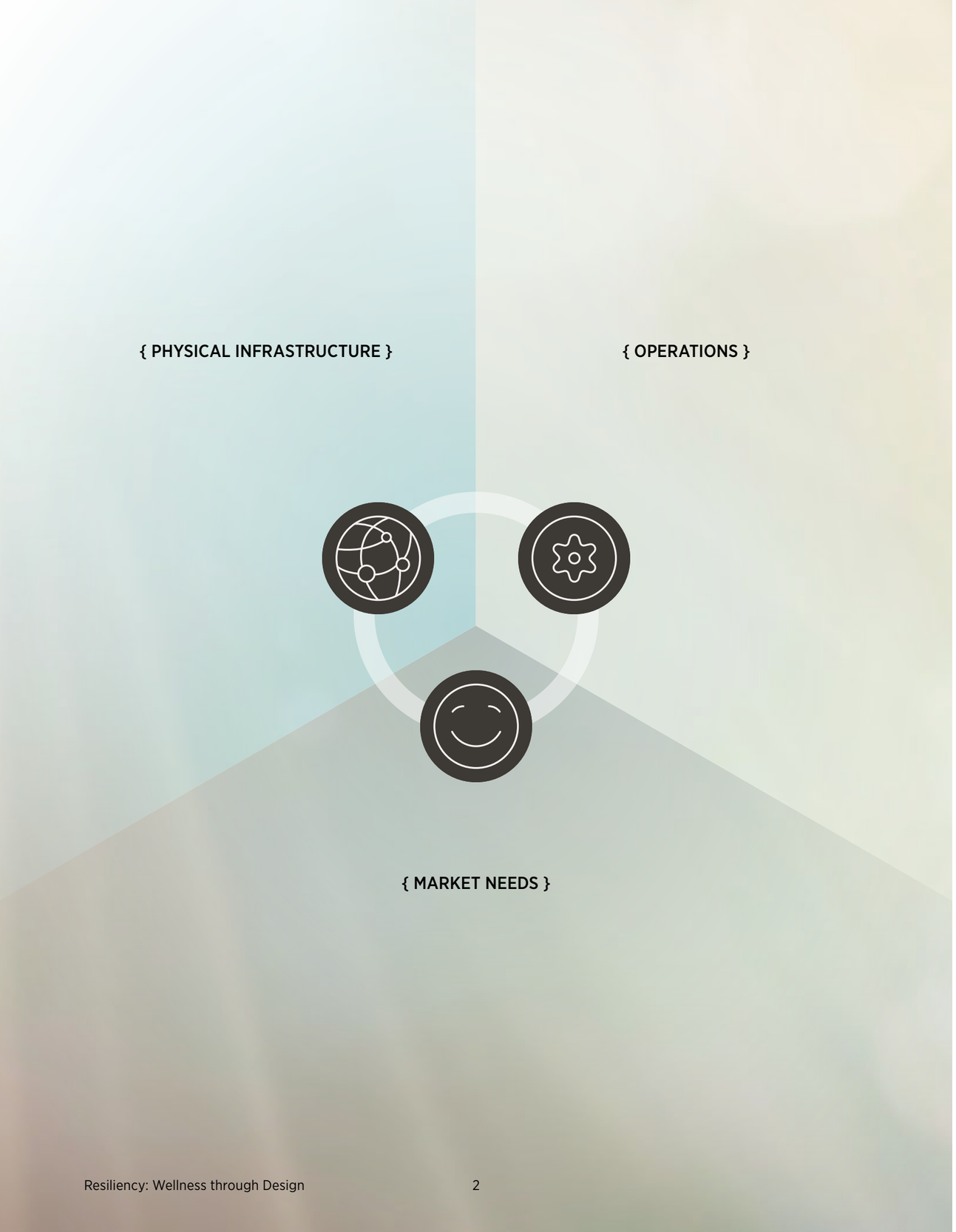
SENIOR COMMUNITIES

resiliency

Wellness Through Design

NOURISHMENT + **AIR** + LIGHT + FITNESS + COMFORT

Ankrom Moisan



We design for wellness by finding opportunities to adapt while maintaining physical infrastructure, operations, and marketing. Wellness relies on constant attention with periodic adaptations, so we've divided our insights into two operational tracks: Normal and Adaptive.

AIR

WE ARE WHAT WE BREATHE.

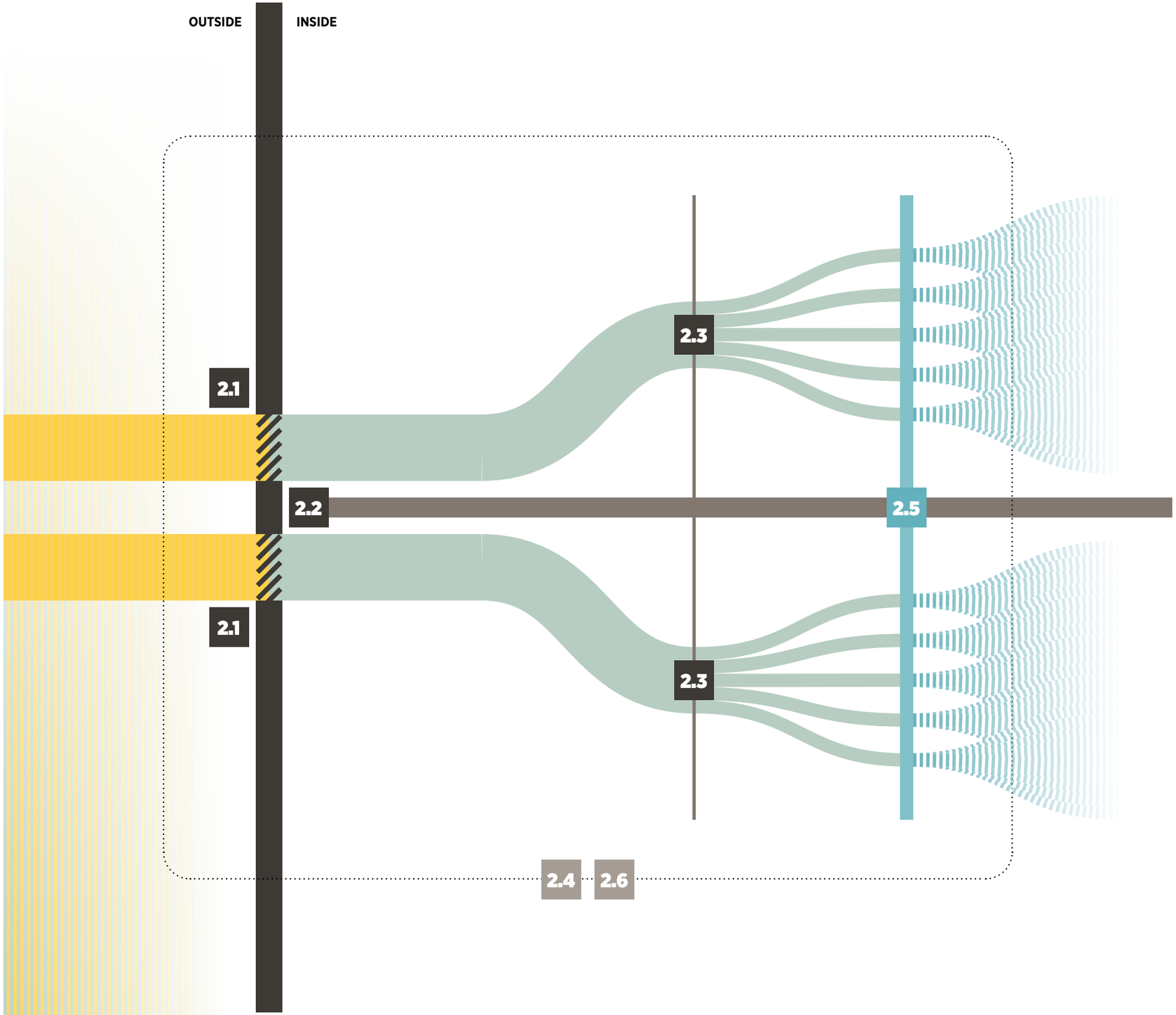
Fresh air and health are intrinsically connected. When the air is clean, people are more alert, physically healthier, able to heal quicker, happier, and more relaxed. This is especially important indoors for seniors who may have limited mobility or access to the outdoors.

Maintaining facility-wide fresh air is complex. No single tool solves every problem, as some might claim.

The following insights—each part of the overall solution—explore six distinct aspects of designing for clean air, from staying on top of filtration to managing vital building information systems related to HVAC, fire and smoke alarms, atmospheric monitors, and more.

TYPICAL OPERATIONS

Fresh air is one of those things most people never notice until it disappears. During normal times, the systems that maintain and monitor fresh air operate smoothly (and mostly invisibly) in the background.



2.1 FILTRATION

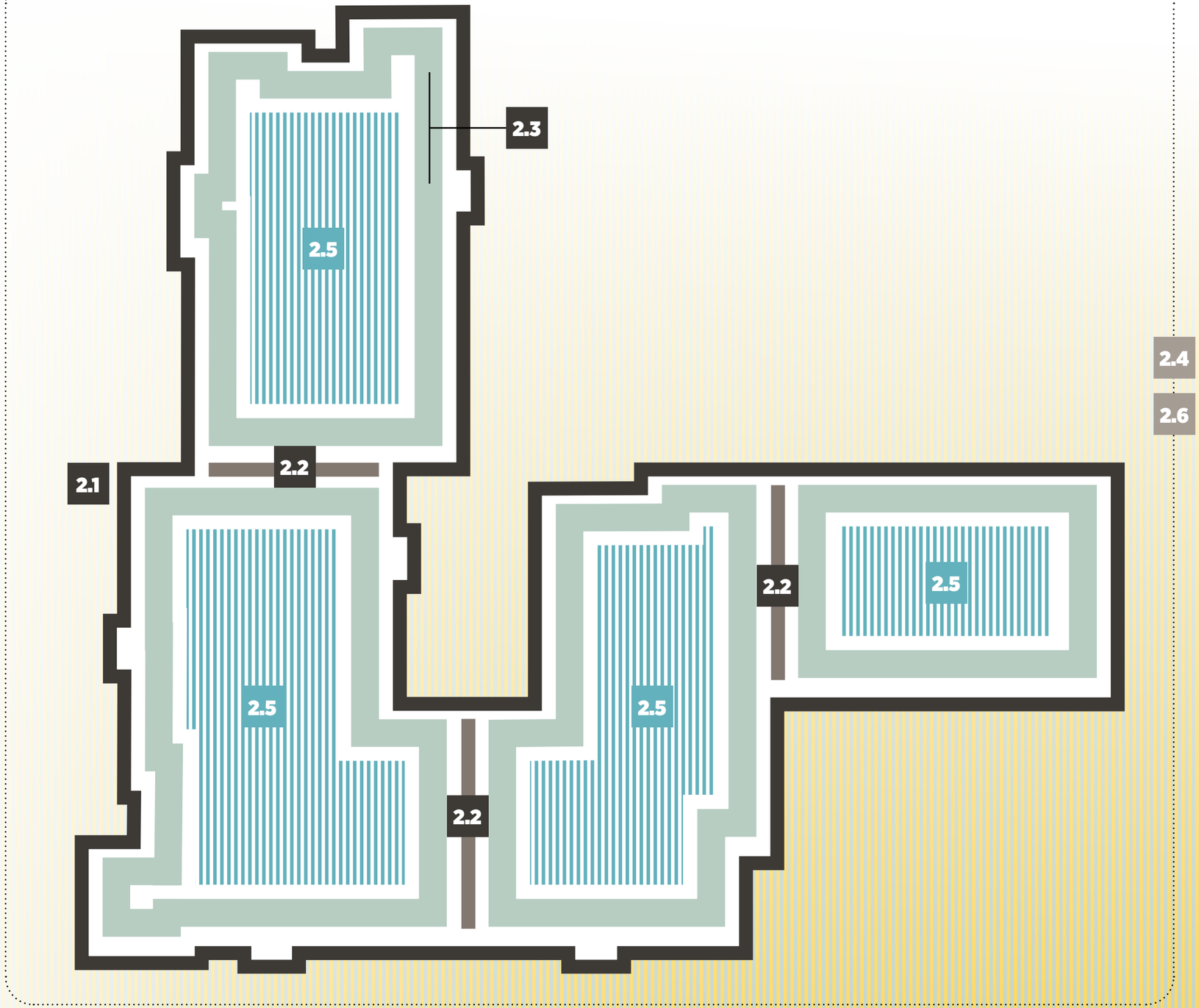
2.2 COMPARTMENTALIZATION

2.3 DILUTION/VENTILATION

2.4 MAINTENANCE

2.5 DISINFECTION

2.6 BUILDING INFORMATION MANAGEMENT



2.1 FILTRATION

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2.3 DILUTION/VENTILATION

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2.5 DISINFECTION

2.6 BUILDING INFORMATION MANAGEMENT

2.1

FILTRATION

Indoor air can be more polluted than outdoor air.
Clean it before it gets in.

2.1 FILTRATION

NORMAL OPERATIONS

Prospective residents and their families may not say a thing about clean air and good filtration. But they'll definitely notice poor filtration, lingering odors, and bad air quality.

Better background air quality

{ MARKET NEEDS }

Locate filters and other equipment access such that maintenance workers can service them without entering residents' spaces. This makes regular maintenance easier and keeps service personnel from having to go from room to room.

Easy access

{ PHYSICAL INFRASTRUCTURE }

Make sure that all airflow passing over condensed water, such as in cooling towers or evaporative coolers, is filtered. For this equipment, rigorously follow manufacturers' inspection and maintenance instructions to avoid bacterial growth or Legionnaires' disease in the water.

Healthy cooling

{ OPERATIONS }

ADAPTED OPERATIONS

Clean indoor air

By understanding good filtration and how to adjust it, staff can better help residents with breathing-related health problems. When indoor air quality is measurably cleaner than outside air, and when a facility can effectively filter air during pollution events like dust storms or wildfires, a senior community can give residents one more service they might not have in their own home: clean air.

Flexible filtration

Equipment filter racks should accommodate a variety of filter types. Smoke from wildfires or dust storms can harm residents with breathing difficulties, and airborne pathogens can cause outbreaks. By using equipment that can easily accommodate various filters, senior communities can fine-tune filtration to fit a specific event or residents' needs.

Safe maintenance

While maintaining operations during an event can be difficult, it's easier when frequently serviced equipment is located outside of residents' living areas. This reduces the chance of spreading an infection and helps residents who require limited contact (for example, those who are recovering from surgery or have compromised immune systems).

Train staff on the code requirements regulating the amount of outside air in critical spaces and how to adjust for poor outdoor air quality.

2.2

COMPARTMENTALIZATION

Isolating HVAC into many smaller zones lets people regulate their individual environment. It also helps staff give personalized service.

2.2 COMPARTMENTALIZATION

NORMAL OPERATIONS

With multiple smaller HVAC zones—preferably one per living unit—residents can control their own environment. While this may be standard in Independent Living units, consider providing some individual room control in Assisted Living, Skilled Nursing, and Memory Care rooms and apartments.

Individual control

{ MARKET NEEDS }

It takes careful study within each building to balance budget, energy efficiency, and performance needs. Prioritize systems that don't rely on shared duct work, such as VRF or through-wall units. To lower the risks of cross contamination, make sure to appropriately zone and balance the HVAC system. Large spaces such as dining rooms can be serviced by separate systems, which supports future subdivisions.

Better zoned systems

{ PHYSICAL INFRASTRUCTURE }

Air balancing is a critical, often overlooked component of HVAC comfort and compartmentalization. While it's especially important in skilled nursing environments for infection control, air balancing affects most spaces. Train staff to identify air-balance issues (like odors where they shouldn't be or haven't been). Know when it's time to work with an air-balancing contractor.

Balanced air

{ OPERATIONS }

ADAPTED OPERATIONS

More independence

Proper compartmentalization and air balancing reduces the risk of airborne pathogens and unpleasant odors, while maintaining health temperatures and humidity levels.

Easy expansion

By subdividing and compartmentalizing large spaces, staff can easily adapt spaces for uses beyond their normal, everyday functions, like supporting social distancing, as emergency-response staging, or as command centers.

Fast installations

To provide short-term HVAC changes if and when needed, keep enough trained staff on hand. Issues can quickly arise that require fast installation of window air conditioners, portable air filters, and temporary heat.

2.3

DILUTION/VENTILATION

Ventilation and outside strategies should adapt to circumstances, whether in individual units or across entire facilities.

2.3 DILUTION/VENTILATION

NORMAL OPERATIONS

With operable windows, residents have more autonomy and individual control over ventilating their environment. Clean, well-maintained ventilation and dilution strategies reduces odors, dust, and other smelly or hazardous airborne particulates.

Better ventilation

{ MARKET NEEDS }

Except for high-rise apartments and memory-care housing, all units should have operable windows. While windows are generally required by building codes, operability may not be. Hard-to open windows are no better than windows that can't open. Mechanically provided outdoor air should be filtered and conditioned before entering living spaces.

Easy-to-operate windows

{ PHYSICAL INFRASTRUCTURE }

Operational plans and budgets should account for routine maintenance, inspection, and repair. To avoid maintenance errors such as redirecting outdoor air, train personnel to maintain equipment and understand how systems function.

Smooth upkeep

{ OPERATIONS }

ADAPTED OPERATIONS

More staff support

One more service that senior communities can provide that most people don't have in their single-family homes: trained staff who can recognize the need for—and adjust—ventilation and dilution strategies.

Greater redundancies

Redundant systems lower the risk of equipment failure during an emergency.

In Skilled Nursing and other critical environments, some redundancy may be required by code or licensing regulations.

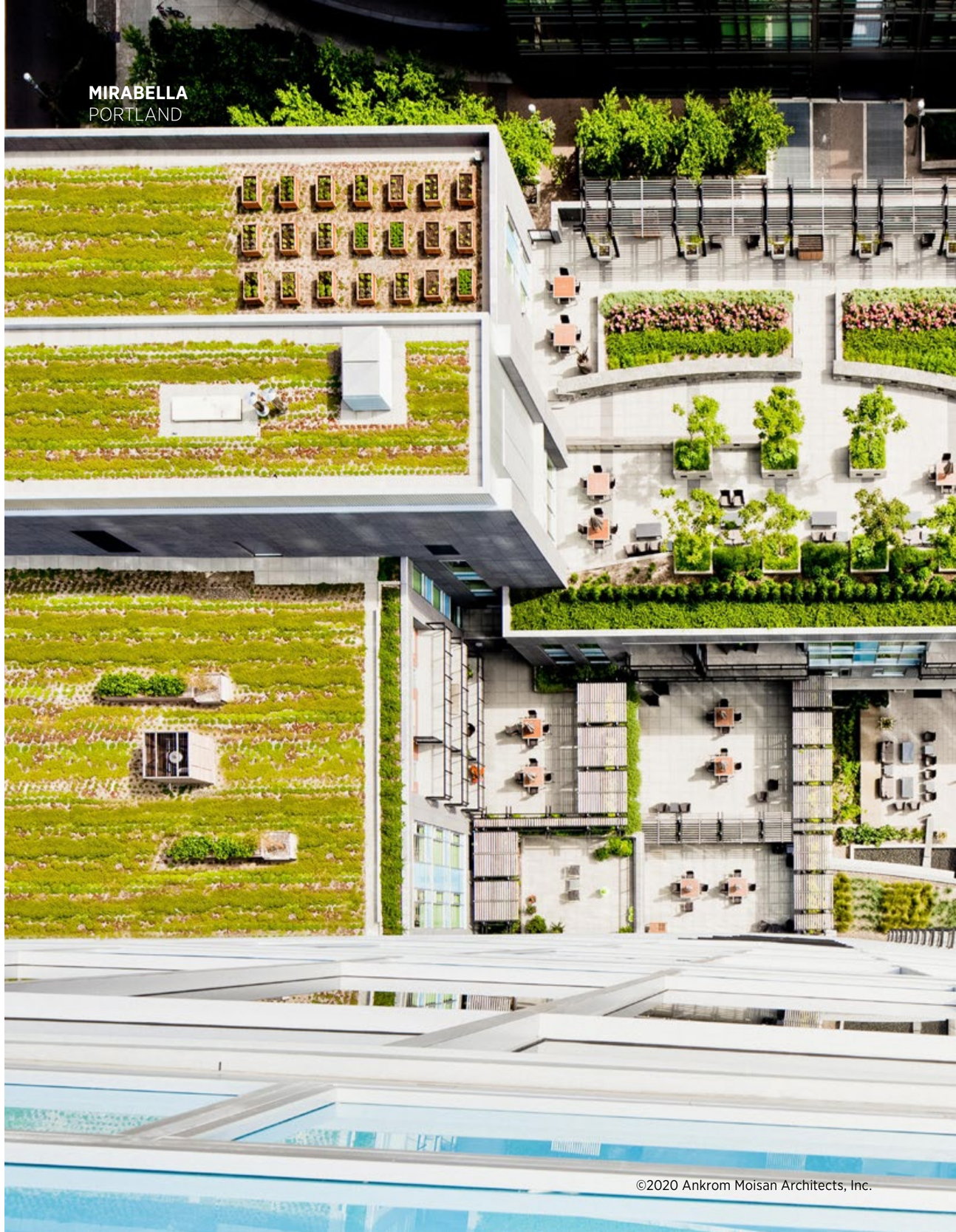
Responsive air flows

Properly trained staff to identify and adjust the amount of outside air entering the facility. Develop policies to identify when to change that amount—when, for example, to bring in less outside air during pollution events or more outside air during infectious disease outbreaks.

2.4

MAINTENANCE

For residents, regular maintenance and a well-trained staff can mean the difference between feeling comfortable and feeling miserable.



2.4 MAINTENANCE

NORMAL OPERATIONS

A clean, well-maintained community is attractive to prospective residents. To current residents and staff alike, a clean environment is essential to overall peace of mind.

Clean spaces

{ MARKET NEEDS }

Adequate storage for supplies and materials is a critical, often overlooked part of good maintenance. Standardize essential equipment and parts across the campus and use readily available parts.

Enough materials

{ PHYSICAL INFRASTRUCTURE }

Staying on top of regular maintenance and operations during normal times means being ready for abnormal times. Unusual conditions like heat waves or wildfires put additional strain on equipment and operations, causing poorly maintained equipment to fail when it is needed most.

Regular upkeep

{ OPERATIONS }

ADAPTED OPERATIONS

Staying safe and clean

Residents experience their community partly by interacting with staff. A staff that can help residents stay clean, safe, and healthy during difficult circumstances will go a long way to maintaining resident satisfaction.

Being prepared

During a storm or seismic event, a well-considered maintenance inventory is crucial to maintaining operations when supply chains have been disrupted. Keep critical replacement parts on hand and set up HVAC equipment to operate on generator power.

More self-sufficient

Ensure that staff understands how systems work and how to adjust them. Heatwaves late in the year, cold snaps, and other events can tie up local contractors, leaving staff on their own.

2.5

DISINFECTION

Well-maintained air disinfection equipment can keep staff and residents—especially vulnerable residents—safe.

TRINITY TERRACE RIVER TOWER
FORT WORTH

2.5 DISINFECTION

NORMAL OPERATIONS

Most residents don't have air disinfection systems in their single-family homes—yet another benefit to moving to a community.

Easily disinfected air

{ MARKET NEEDS }

Consider using air disinfection equipment, especially for vulnerable populations. Unlike filters that physically remove particles from the air, air disinfection systems like UV lights are designed to kill pathogens in the air stream (though this may not include the SARS-CoV-2 virus).

Keep vulnerable people safe

{ PHYSICAL INFRASTRUCTURE }

Like all building systems, it is important that staff understand what these systems can and can't do and how to maintain them.

More practical applications

{ OPERATIONS }

ADAPTED OPERATIONS

More targeted disinfection

Make portable disinfection solutions available for staff to address special cases on a resident-by-resident basis.

More accurate information

Operationally, staff can monitor indoor air quality and give residents on-the-ground, accurate information and tailored communication. It's also vitally important to regularly clean and maintain air ducts. Crushed ducts in attic or other spaces waste energy and can introduce contaminants.

1.6

BUILDING INFORMATION MANAGEMENT

Easily and efficiently managing complex facility systems and information is an ability that cannot be overstated, especially during an unexpected event.

2.6 BUILDING INFORMATION MANAGEMENT

NORMAL OPERATIONS

Well thought-out alarms and alerts can notify staff of issues before they become complaints.

More useful alerts

{ MARKET NEEDS }

Consider building information management systems for all large projects. Real-time information about system functions can help staff more clearly understand events and identify problems early. Many problems can be addressed remotely.

Better situational awareness

{ PHYSICAL INFRASTRUCTURE }

Building information systems help staff see how systems function in real time and track trend data to identify problems.

Bigger-picture understanding

{ OPERATIONS }

ADAPTED OPERATIONS

More responsive to problems

Building information systems can help staff respond to and manage problems. With access to real-time feedback on the functioning of vital equipment such as fire and smoke alarms, pumps, and filtration equipment, staff can better prioritize responses.

During and after an event, building information systems tied into the fire alarm system can monitor fire dampers, sprinkler flow, and other systems and can inform post-event system analyses (how well did the dampers close, for example, or how quickly did the generator respond?).

Easier systems checks

Event-response policies and procedures should include prioritizing equipment checks (checking on pumps prior to a projected rain event or AC prior to a heat wave.) This is easily done with and building information system and, if on-site staff is otherwise occupied, could even be done remotely.

Systems can also be monitored in real-time during events, either on-site or remotely. Staff can monitor the building temperatures during a heatwave or the runtime on filters during a pollution event.

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